Accelerating Biometric Technologies

Arlington, Virginia
February 13-15

Omid M. Omidvar, PhD, MBA

Program Manager, Technology Analyst
Telephone: (301) 975-4401
email : oomidvar@nist.gov
www.atp.nist.gov **1-800-ATP-FUND**

A Decade of Innovation

- 600 projects co-funded with 1,200 participants and 1,027 subcontractors (157 Joint Ventures)
- $3.3 billion of advanced technology development funded
  - ATP Share = $1.6 billion
  - Industry Share = $1.7 billion
- Small businesses are thriving
  - > 50% of projects led by small businesses
- More than 150 Universities participate
- Nearly 20 national laboratories participate

National Institute of Standards and Technology • Technology Administration • U.S. Department of Commerce

Investments in Innovative Technologies

Electronics and Photonics ($329 M)
- Microelectronics
- Optoelectronics
- Optics Technologies
- Power Technologies
- Wireless Electronics
- Organic Electronics

Biotechnology ($254M)
- DNA Technologies
- Tissue Engineering
- Drug Discovery Methods
- Proteomics
- Medical Devices & Imaging
- Microfluidics

Manufacturing ($180 M)

Information Technology ($389 M)
- Biometrics, Pervasive Systems
- Intelligent Systems & Control
- Digital Video on the Networks
- Information Infrastructure for Healthcare: Storage and Mining
- Electronic Commerce, Security
- Natural Interface Systems
- Beyond Genome: Bioinformatic

Chemistry and Materials ($344 M)
- Chemical Processing
- Sensors
- Metabolic Engineering/Catalysis
- Combinatorial Methods
- Separations/Membranes
- Materials Processing
- Advanced Materials
- Nanotechnology
- Material Interfaces

NIST National Institute of Standards and Technology • Technology Administration • U.S. Department of Commerce

ATP Criteria : Critical Elements of a Proposal

- **Scientific and Technological Merit (50%)**
  - ✓ Innovations in the Technology
  - ✓ High Technical Risk & Feasibility
  - ✓ Quality of R&D Plan
- **Broad-Based Economic Benefits (50%)**
  - ✓ Economic Benefits
  - ✓ Need for ATP Funding
  - ✓ Pathway to Economic Benefits

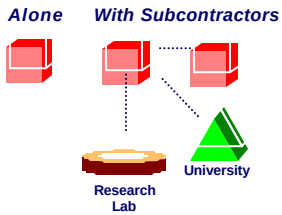
NIST National Institute of Standards and Technology • Technology Administration • U.S. Department of Commerce

What ATP Does for Start ups

- Early financial support
  - Reduced risk for R&D investment
- Research support
  - Information on assembling a JV
  - Links to additional technical resources
- Recognition
  - Leverage for additional financing
  - External validation
- Independence
  - Companies retain their intellectual property rights

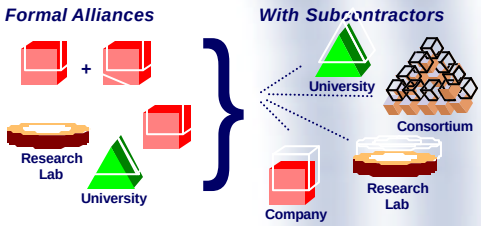
ATP Eligibility

SINGLE COMPANIES



- For-profit company
- 3-year time limit
- $2M award cap
- Company pays indirect costs
- Large companies cost share >60% of project cost

JOINT VENTURES



- At least 2 for-profit companies
- 5-year time limit
- No limit on award amount
- Industry share >50% total cost

- **Intellectual property is owned by the for-profit companies**

ADVANCED TECHNOLOGY PROGRAM

Advanced Technology Program

Bridging the Gap Between the Laboratory and the Marketplace

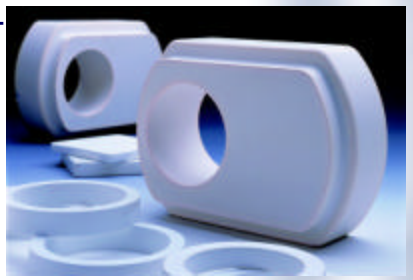
NIST **National Institute of Standards and Technology** • Technology Administration • U.S. Department of Commerce

ADVANCED TECHNOLOGY PROGRAM

Nanophase

Nanophase Technologies Corp.

Developed a novel process for producing "nanosized" (ultra-small-scale) ceramic powders in commercial quantities. Powders have wide-ranging uses in cosmetics, semiconductor polishing slurries, structural parts, and other applications.



NIST **National Institute of Standards and Technology** • Technology Administration • U.S. Department of Commerce

ADVANCED TECHNOLOGY PROGRAM

Affymetrix, Inc.
Molecular Dynamics, Inc.

Technology to support complete DNA analysis of clinical samples on a chip.

NIST National Institute of Standards and Technology • Technology Administration • U.S. Department of Commerce

ADVANCED TECHNOLOGY PROGRAM

Strongwell Corporation

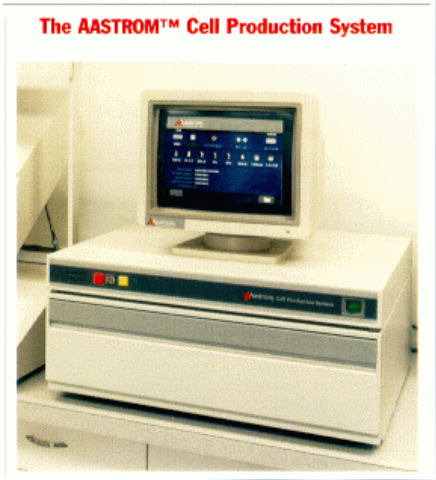
Develop large cost-effective, high-performance composite shapes for infra-structure applications that last longer and are maintained more easily than concrete and steel.

NIST National Institute of Standards and Technology • Technology Administration • U.S. Department of Commerce

ADVANCED TECHNOLOGY PROGRAM

Aastrom Biosciences

A new human stem cell and blood cell culture system which may enable new therapies to diseases such as cancer, AIDS, and genetic blood diseases



NIST National Institute of Standards and Technology • Technology Administration • U.S. Department of Commerce

ADVANCED TECHNOLOGY PROGRAM

Displaytech, Inc.

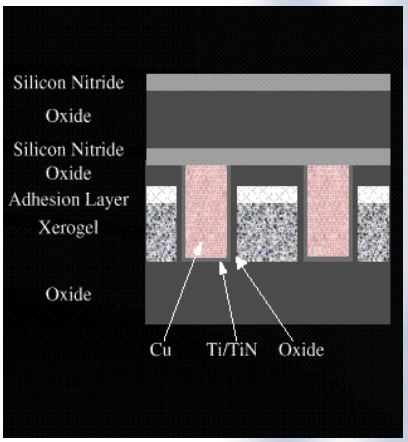
Develop low-cost "imager on a chip" technology for advanced display, printing, and computing applications.

NIST National Institute of Standards and Technology • Technology Administration • U.S. Department of Commerce

ADVANCED TECHNOLOGY PROGRAM

Texas Instruments

Integration of copper and ultra-low-k xerogel for high performance interconnects on semiconductor chips

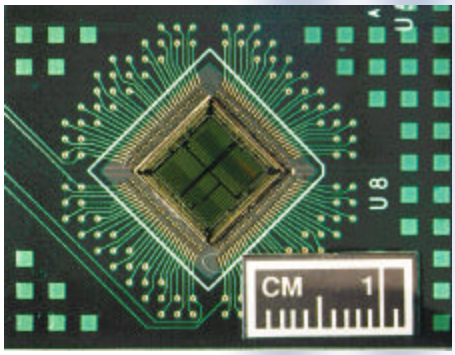


NIST National Institute of Standards and Technology • Technology Administration • U.S. Department of Commerce

ADVANCED TECHNOLOGY PROGRAM

NCMS - Printed Wiring Board

Successful development of new technologies to improve the production of printed wiring boards is helping to increase the U.S. market share in this industry.



NIST National Institute of Standards and Technology • Technology Administration • U.S. Department of Commerce

Aesthetic Solutions

A new tool kit of software components will lower the barriers to using virtual reality in applications such as education, training, entertainment, and commerce.

NIST National Institute of Standards and Technology • Technology Administration • U.S. Department of Commerce

Automotive Composites Consortium

Improved P4 manu-facturing process to make large, complex automotive composite structures -- pickup truck boxes.

NIST National Institute of Standards and Technology • Technology Administration • U.S. Department of Commerce

Lincoln Composites

Fabricated and tested performance for four prototype low-cost joints of composite production risers for use in offshore oil exploration.

National Institute of Standards and Technology • Technology Administration • U.S. Department of Commerce

Engineering Animation, Inc.

Create a three-dimensional, fully detailed engineering database of the human body using computer visualization and computational dynamics

National Institute of Standards and Technology • Technology Administration • U.S. Department of Commerce

IT for Manufacturing Saginaw Machine Systems, Inc.

Project Title:

Advanced Compensation Techniques for Machine Tool Accuracy

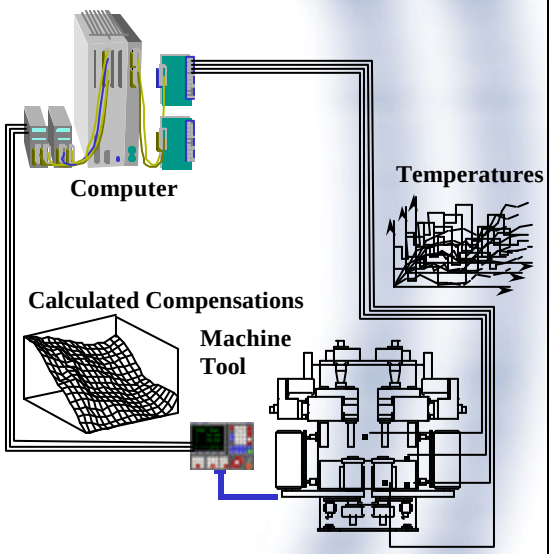
ATP Funding Amount:

$540,000.

Other Participants:

University of Michigan

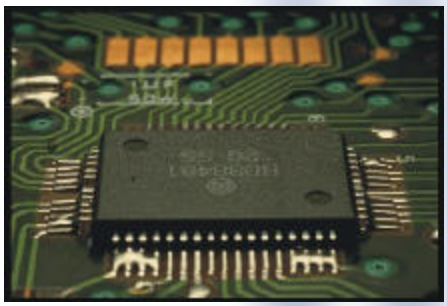
- The projects uses intelligent control methods to calculate how much the machine must compensate for variations.



National Institute of Standards and Technology • Technology Administration • U.S. Department of Commerce

Honeywell and AMD

Developed an Advanced Process Control (APC) technology that increases consistency and yield in the semiconductor industry, helping industry to maintain its 25-30 percent annual growth in productivity.



National Institute of Standards and Technology • Technology Administration • U.S. Department of Commerce

ADVANCED TECHNOLOGY PROGRAM

Diamond Semiconductor Group, Inc.

Developed a new architecture for semiconductor ion implantation machines for high-current implantation

NIST National Institute of Standards and Technology • Technology Administration • U.S. Department of Commerce

ADVANCED TECHNOLOGY PROGRAM

Biometrics Technologies

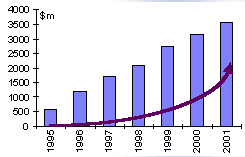
- Fingerprint recognition
- Face recognition
- Speaker recognition
- Hand and finger geometry,
- Palm and vein patterns, knuckle contour
- Iris texture, retinal pattern
- Dynamic/static handwritten signature
- Keystroke dynamics

NIST National Institute of Standards and Technology • Technology Administration • U.S. Department of Commerce

ADVANCED TECHNOLOGY PROGRAM

Smart Cards

- 80% of the smart-card market is in Europe.
  - By 2002 it will reach a $3.5 Billion market.
- European market:
  - mobile phones
  - access to public transportation
  - banking
- US market (predicted):
  - A large part of the market will be driven by computer-based applications and e-commerce.



NIST National Institute of Standards and Technology • Technology Administration • U.S. Department of Commerce

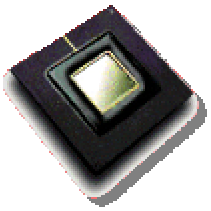
ADVANCED TECHNOLOGY PROGRAM

State-of-the-art in biometrics?

NIST National Institute of Standards and Technology • Technology Administration • U.S. Department of Commerce

ADVANCED TECHNOLOGY PROGRAM

Live-scan Fingerprint


NIST National Institute of Standards and Technology • Technology Administration • U.S. Department of Commerce

ADVANCED TECHNOLOGY PROGRAM

Face Recognition Systems



True Face Web
True Face Network
True Face PC



NIST National Institute of Standards and Technology • Technology Administration • U.S. Department of Commerce

ADVANCED TECHNOLOGY PROGRAM

Speaker Recognition

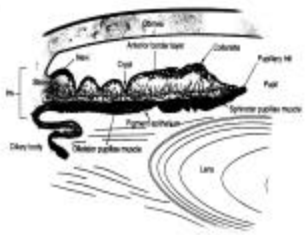
- Can be used at a workstation or over telephone lines.
- Requires only a microphone and a personal computer with sound card.
-

NIST National Institute of Standards and Technology • Technology Administration • U.S. Department of Commerce

ADVANCED TECHNOLOGY PROGRAM

Iris Recognition

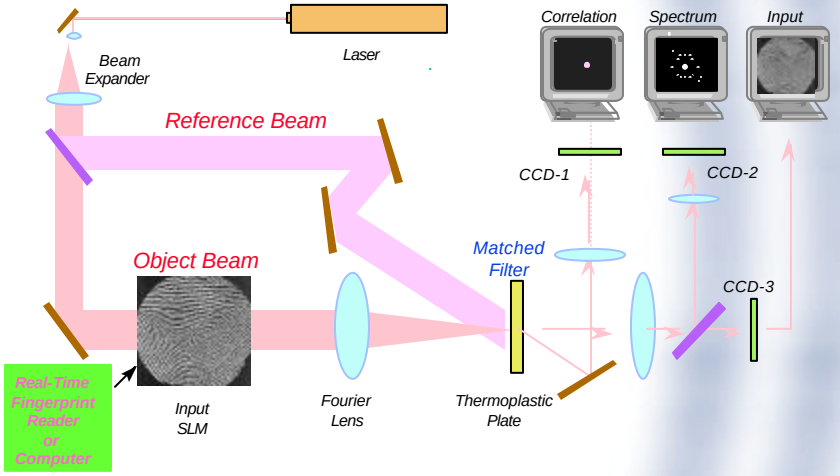
- Identifies people by the patterns in the iris of the eye.
- The iris of each eye is absolutely unique.
- No two irises have been found to be alike in their mathematical detail, even among ident



NIST National Institute of Standards and Technology • Technology Administration • U.S. Department of Commerce

ADVANCED TECHNOLOGY PROGRAM

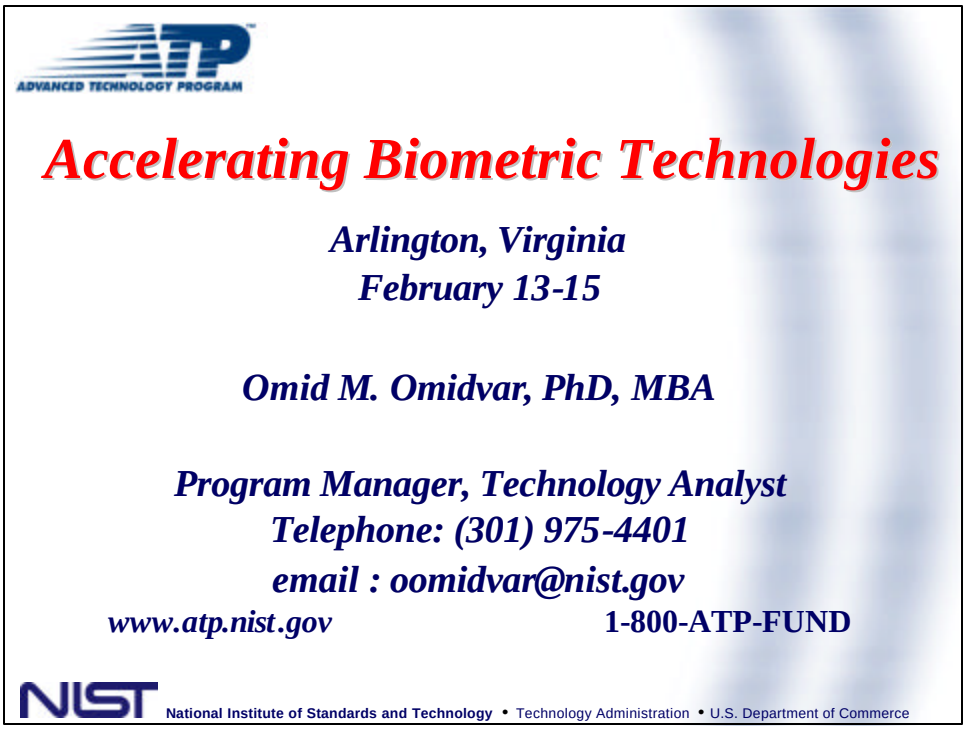
Optical Pattern Recognition



NIST National Institute of Standards and Technology • Technology Administration • U.S. Department of Commerce

Biometrics Technologies
Funding R&D Strategy

Omid M. Omidvar, PhD, MBA
Advanced Technology Program
Telephone: (301) 975-4401
email : oomidvar@nist.gov


ADVANCED TECHNOLOGY PROGRAM
Accelerating Biometric Technologies
Arlington, Virginia
February 13-15
Omid M. Omidvar, PhD, MBA
Program Manager, Technology Analyst
Telephone: (301) 975-4401
email : oomidvar@nist.gov
www.atp.nist.gov
1-800-ATP-FUND
NIST
National Institute of Standards and Technology • Technology Administration • U.S. Department of Commerce